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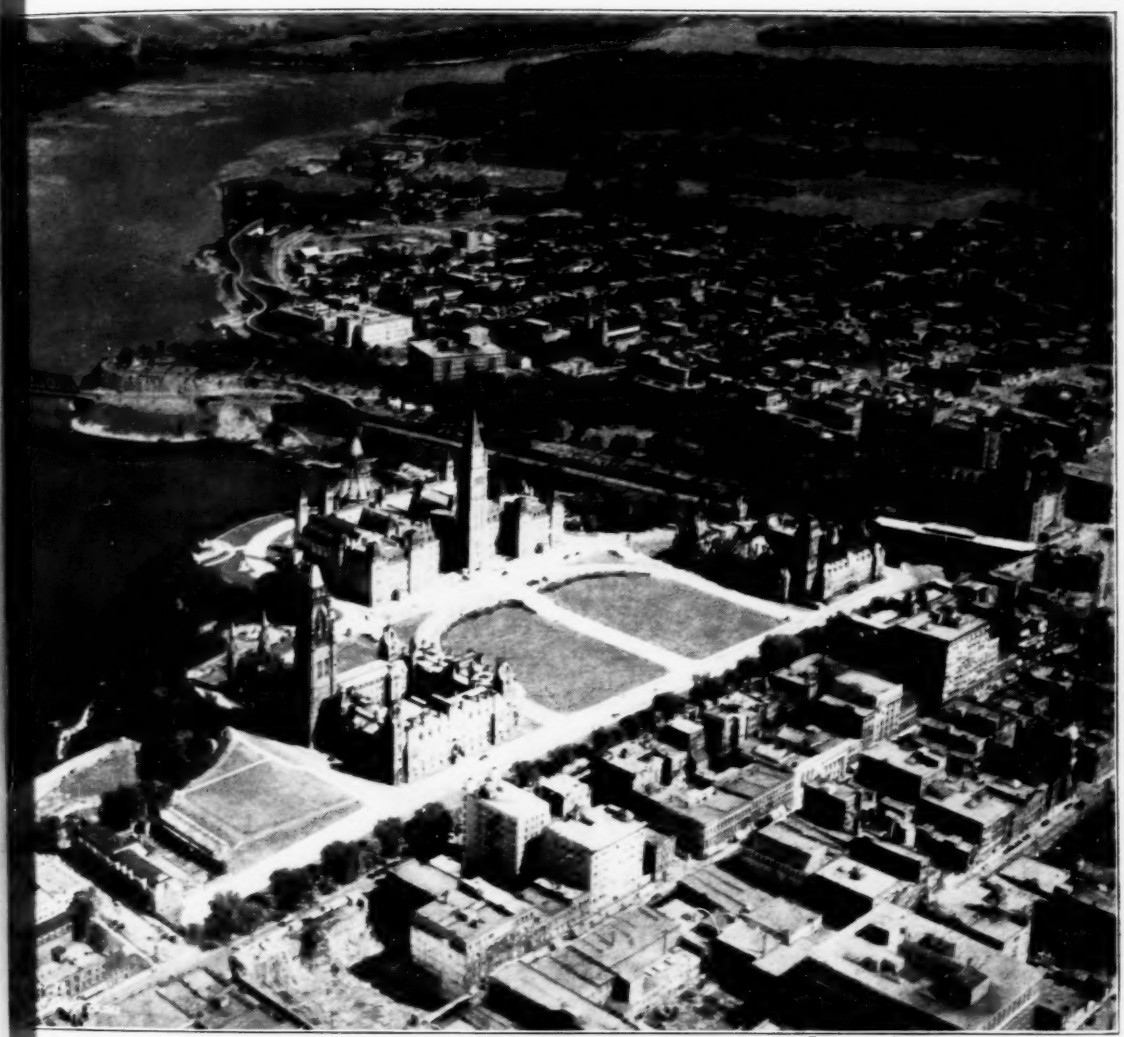

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VOLUME XXVIII FEBRUARY, 1929 NUMBER 2

THE COFFEE INDUSTRY OF BRAZIL

W. H. HAAS
Northwestern University

The story of coffee is full of romance, more so than that of any other tropical product, with possibly the exception of rubber. The earliest history is shrouded in the mysteries of a legendary past, and we have no inkling when man first learned to heat the bean and make from it an exhilarating drink. Some writers would have coffee to be a part of the gift that Abagail made to David when she attempted to appease his wrath.[1] Even the origin of the name is uncertain. It has, with very good reason, been linked with *Kaffe,* a town in southwestern Abyssinia, where the plant appears to be native.[2] Altho we know little of its earliest history or even the origin of its name, we do know that with its introduction into Europe about 1615 by Venetian traders coffee made its first tiny bow to what was to be a brilliant commercial future.

Coffee's rise in the commercial world was very slow at first. Altho it soon had its devotees and became a regular article of commerce, its use was narrowly restricted to a very small class because of its scarcity and costliness. However, by the latter part of the century of its introduction into Europe, it became very popular with an ever growing group if one may judge by the rapid rise of the "coffee-houses" of the period. It is interesting to know that "the brew" was sold then not so much on its merits as a mere drink as for its supposed medicinal qualities.[3]

[1] Samuel II, Ch. XXV, 18.

[2] See New English Dictionary. The word takes several forms. The Turkish is *gah-wah* (pronounced Kah-veh); the French, Spanish, Portuguese, Scandinavian, *café;* the Italian *caffè;* the Dutch *koffie;* and the English coffee. The German *kaffee* seems to be a hybrid.

[3] What is believed to be the first newspaper advertisement of coffee appeared in the *Publick Adviser* of London, May 19 to 26, 1657. It said: "In *Bartholomew Lane*

THE KINDS OF COFFEE

Not all coffees are the same in looks, aroma, taste, or chemical analysis. The coffee of Porto Rico is not like that of Brazil, nor is that of Brazil like that of Colombia. What is more, the coffee from any individual region varies greatly in quality because of the character of the soil in which it grows, the climate, the care the plant receives, or the method of preparation of the berry for market. The taste and aroma of coffee are peculiarly sensitive to the environment which produces it. Recognizing the many differences, the trader, therefore, grades the beans according to size, color, hardness, roasting qualities, taste, and so on. The coffee of each region is assorted into many grades, and different grades from widely separated regions again are mixed by dealers to make up the numerous blends on the market today. The many grades and qualities seem all the more strange when one stops to consider that practically all commercial coffees come from one species[4]—*Coffea arabica.* Some of the non-cultivated species are said to be entirely free from caffein, considered by many to be the harmful ingredient in the coffee which we use.

Brazil is a country of quantity, not quality production, altho many efforts have been made of late to produce a higher grade coffee. In a measure, Brazil's success has been due to the fact that the world market has demanded the cheaper grades which Brazil is so eminently fitted to produce in quantity. The difference between Brazilian and other coffee is so sharply marked that the American trade recognizes two large groups, the "Brazils" or "price" coffees, and the "milds" or "quality" coffees, the latter including all those not grown in Brazil. According to trade reports there seems to be a tendency at present toward the use of higher grade quality coffees. If this tendency makes itself strongly felt, then Brazil will be forced to improve its grade or

on the back side of the Old Exchange, the drink called *coffee* (which is a very wholsom and Physical drink, having many excellent vertues, closes the Orifice of the Stomack, fortifies the heat within, helpeth Digestion, quickneth the Spirits, maketh the heart lightsom, is good against Eye-sores, Coughs or Colds, Rhumes, Consumptions, Headach, Dropsie, Gout, Scurvey, Kings Evil and many others) is to be sold both in the morning, and at three of the clock in the afternoon." Quoted by William H. Ukers, All About Coffee (1922), p. 56.

[4] "Altogether there are about eighty recognized species of *Coffea* of which only two are cultivated to any extent, namely Arabian coffee *(C. arabica)* and Liberian coffee *(C. Liberica).*" Freeman and Chandler: The World's Commercial Products (1911), p. 176.

else give way to those countries now so rapidly expanding in the production of "milds," such as Colombia and Venezuela.[5] The demand for the cheaper grades in a large measure accounts for the downfall of the industry in Java and its shifting to Brazil.

THE GROWING OF COFFEE

In many countries the growing of coffee is on a small scale and by very primitive methods. A piece of land is partly cleared of underbrush, the trees are set in the cleared places and the larger trees are left to produce the necessary shade. In the main coffee region of Brazil the trees are not shaded and the same care is bestowed on them and the soil as is practiced in maintaining fruit orchards on the Pacific slope. Every effort is made to obtain the maximum production of quality coffee with an economic expenditure of money and labor. The problem in cultivating the soil under the low-hanging limbs is the same as that encountered in our own intensive cultivated citrous groves or peach and apple orchards. In general the same plan of cultivation and fertilization and the same type of machinery are used. To the natural conditions which make this large scale yet intensive cultivation possible may be attributed, in large part at least, Brazil's dominance in the coffee world. The small producer in other lands cannot compete with this machine-produced coffee unless he has control over very cheap labor or the coffee grown is of exceptional quality.

Of course there are other reasons for this dominance. Brazil has certain other natural advantages of which one of the major is favorable soil conditions. The ideal soil is one with a good subsurface drainage and one which works easily. If it is rich in phosphoric acid and humus, so much the bettter, but most vital is the physical condition, for the fertilizer may be added readily. This is done, more or less, on all the large plantations. The soil from disintegrated volcanic rocks seems to be the best the world over. In São Paulo such rocks cover large areas and have become disintegrated to great depths, thus producing a very deep soil. This, in connection with the gently rolling character of the land, produces natural drainage conditions that are unrivaled.

[5] The latest data available for all South American countries are for 1927. For this year the coffee exported by Brazil was $337,591,000 out of a total foreign export of $457,531,000; Columbia $83,080,000 out of a total of $109,818,000; Venezuela $18,771,000 out of a total of $75,364,000; Ecuador $2,185,000 out of a total of $12,059,000. Dept. of Com. letter 30g.

On these slopes are two general types of soils. The one most favored is a dark, brownish red soil known as "terra roxa"; the other, the "massapé," almost equally good, varies from yellowish

FIG. 1. Heavily loaded coffee branches. The red purplish berries against the fresh, bright green pointed leaves is a beautiful sight, especially when in long rows that extend up and down slope, dying out in the distance.

brown to dark red, or even black. Of course the color has no significance except that it indicates where the most favorable soil conditions for coffee prevail. If the color of the soil in other areas may be considered a correct index of favorable conditions, then the coffee area in Brazil readily could be doubled or even trebled. Thus it is not an exaggeration to say that Brazil would have no diffi-

culty in supplying the world with twice as much coffee as it now consumes. The crop produced annually is limited very definitely by the possibilities of finding a favorable market and not by the possible production.

Favorable climatic conditions are almost equally vital. The tree needs an abundance of water fairly uniformly distributed thruout the year. An annual rainfall of sixty-five or seventy inches seems to be the most desirable. A heavier rainfall has a tendency to force the wood at the expense of the fruit, and a lesser amount poorly distributed may be fatal to a well-formed large berry. As may be noted from the study of the rainfall in Brazil, conditions are far from ideal;[6] yet, with such favorable soil conditions, the variation is not vital. The coffee plant is also confined to an area with a limited range of temperature. It is very sensitive to frost as well as to the hot tropical noonday sun. An annual mean of about 70° F. seems to be the most favorable. In this respect the São Paulo region is fairly near the ideal. Destructive frosts, however, occur and temperatures up to 97° F. have been recorded.

The tree is grown in every state of the republic, but only in the section centering in the state of São Paulo is it most profitably grown at present. Here topography, soil, and climatic conditions, together with excellent transportation systems, make an intensely organized industry possible with a production cost lower than that of any other area in the world. Plantations with 300,000 to 400,000 trees are more or less common. One owner is credited with 8,000,000 trees. Many fazendas (plantations) have their own radiating railway systems, owning whole villages and giving constant employment to 5,000 or more people. On some plantations even water running in sluiceways is used to carry the berry from the field to the pulpers and washing tanks. The primitive scenes found elsewhere in Brazil are not to be seen in the coffee region. Here are the sights of a highly specialized industry and only on the most efficient fazendas is the growing found very profitable.

Like the farmer in this country, the coffee grower also has his worries. He is very much at the mercy of the weather. The trees bloom from September to December and during the four days, approximately, that the individual bloom is on the stalk even light rains and winds may prevent fertilization or the winds may beat

[6] See graf Fig. 6, p. 173, of the author's "Studies in the Geography of Brazil," The *Journal*, Vol. XXIV (May, 1925), pp. 172-175.

the blossoms off. This is much truer in Brazil than in other countries because rarely are the trees protected by windbreaks. As trees grow older an increasing amount of fertilizer must be used. Just as in this country, and for the same reason, trees must be pruned to produce better grade berries and to facilitate picking. The trees are at their best, as a rule, from the sixth to the seventeenth years, altho a tree which has had good care may produce fairly well at twice that age. On the whole the yield seems very small. Year after year the average is around one and one-

FIG. 2. A partial view of one of the large estates. The house of the owner (fazendeiro) is among the trees and those of some of the workmen in the middle foreground. The long rows of trees are spaced sufficiently far apart to offer plenty of air and sunlight.

half pounds per tree. In those parts of plantations, however, where the trees are at their prime, the average is five or six pounds. Individual trees have been known to produce eight, ten or even twelve pounds.

As with the growing of almost any crop, there is a constant war with enemies of various kinds. Among the major ones are the rodents, birds, insects and fungi. The latter two groups are the worst. Like with our fruit trees, the bark borers are a serious menace. There are numerous kinds of beetles, caterpillars, leaf miners and the like. The most serious pest of all, one that seriously threatened the industry for a time, is the coffee beetle, *Stephanoderes coffeae Hag.* This beetle is to coffee what the boll weevil is to cotton or the European corn borer is to corn. It is

doubtful whether this pest can ever be eradicated, but means have been found by which its numbers may be held in check. This is done by gleaning so thoroly after each crop has been removed that

FIG. 3. All hands turn out at picking time. The branches reach to the ground and to cultivate under them without injuring them is a problem. No grass or weed is to be found on a well kept fazenda.

not a single berry remains over for the next season. All possible harboring places for insects such as sacks, baskets, or buildings, are either fumigated or destroyed. The pest was imported from Java which learned to combat it after fifteen years of labor. Sumatra has succumbed to it.[7] It attacks the fruit. Prior to being

[7] *Wileman's Brazilian Review*, Rio de Janeiro, Dec. 10, 1924.

cleaned the only outward signs on the beans are little holes the size of a pin prick. However, when the bean is broken there remains only the thin shell, the inside having a rotted appearance and being entirely unfit for use. As the life of the insect is only about 25 days, and as 153 insects have been found in one bean, a little simple arithmetic will show what the possibilities are if the gleaners overlooked a single infested berry. "The spread of the beetle has been slow but steady, and in some zones more than 89 per cent of the trees are found to be affected. . . . . It is doubtful whether the planters on the whole fully appreciate the gravity of the situation."[8]

PREPARATION FOR THE MARKET

Much work is required before the coffee bean is ready for the market. The deep crimson or purplish berries much like elongated cherries are ready to pick in the São Paulo region sometime between May and September, about seven months after blossom time. The beans lying face to face have a thick fleshy covering overlying a closely fitting parchment-like layer. There are two general methods in use for removing these coverings, "the dry" and "the wet." The dry is the older and more common and therefore is spoken of generally as the common or natural method. In this process the berries are first dried then hulled and cleaned and later graded. In the wet method the first process is called pulping, the second fermentation to loosen adhering particles of pulp and parchment, then washing, drying and grading. The latter is the method used on all the large up-to-date plantations where water is available because of the better appearance of the beans.

In the marketing a highly intricate and elaborate system has been developed, far too elaborate to give here in detail; it is a study in itself. The first steps are the grading and sacking on the drying floors of the fazendas. Many of these have their own railway switching facilities, while others get their products to the railway station on big four-wheeled wagons commonly drawn by six horses. The automobile truck, however, is coming to play a more important part each year, wherever transportation is required. Whatever the transportation may be at the fazendas, all the coffee of the São Paulo region when once on the railroad must be delivered at the port of Santos. As Santos at sea level is sepa-

[8] U. S. Bureau of Foreign and Domestic Commerce Spec. Circ. 262, Aug. 28, 1928.

rated from the plateau where the coffee goes by a steep escarpment 2600 feet high, the coffee becomes concentrated at the top and is passed down over a cable way so arranged that the load going down exerts the greater power in pulling the empty and partially loaded cars up the slope. Coffee thus pours into Santos as thru a funnel.

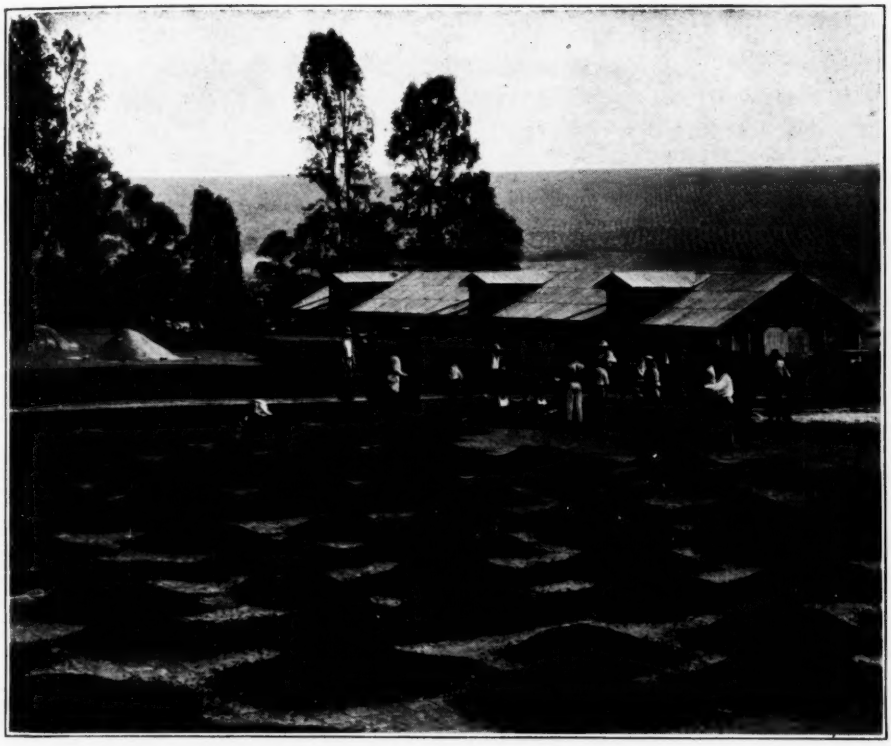


FIG. 4. The coffee in the foreground is ready to be sent to the warehouse from the drying floors. Beyond the buildings are coffee trees as far as the eye can reach.

Santos for this reason becomes the greatest coffee port of the world. As the coffee arrives it is stored in one of the numerous huge warehouses which line the waterfront for three or four miles. As each sack comes into the warehouse on the head and shoulders of a dock laborer, a generous amount is extracted by a special instrument. This sample is divided into two parts, one for the owner and one for the commission merchant. These samples are kept until the particular sack from which they came is sold to an exporter or foreign buyer. Having bought the coffee the ex-

porter's next step is to regrade and test it. In some cases the coffee is even roasted and "cup sampled" before it leaves Brazil. Every activity along the way as the coffee goes to market exacts a toll which of course is added to the final cost of the coffee.

When the coffee reaches a foreign port such as New York, the world's greatest coffee center, there are many opportunities for extra charges. Altho it is admitted to the United States free of duty, there must be a government permit to land the cargo, samples must be delivered to a government office for inspection, and other similar requirements. As the cargo of 75,000 or 100,000 bags assigned to different importers is unloaded from the steamer, it is grouped accordingly, some of it is sampled and stored for orders, other consignments are sent to the storage warehouse, others are shipped by rail or boat. All of these activities add to the ultimate charge.

Thus there are many items of expense along the way. So many charges are added to the price of coffee that altho we may be forced to pay sixty or seventy cents per pound, the grower rarely gets as much as ten cents. If the gross income of the plantation owner, therefore, averages less than fifteen cents per tree, his actual profit per tree must necessarily be very small. A few of the major charges besides those of growing and preparing are freight to Santos, transfer to warehouse, storage charges of several kinds, several kinds of local taxes, port and warehouse charges, a surtax of about twenty-five cents per bag to cover valorization, a São Paulo export tax of nine per cent ad valorem, loading charges, ocean freight, New York port and other charges such as sampling, cleaning, marking, matching, and the like. As the wholesale prices in New York are about one-third of the retail prices it is readily seen that much is added to the original price in this country as well as in Brazil.

What Coffee Means to Brazil

During the months of October and November, 1927, Brazil celebrated its second centennial of the introduction of coffee. Besides exhibits of various kinds to show the importance of the industry, speeches by officials of high rank called attention to the great benefits Brazil had derived from the industry. Statements similar to the following were common:

> Coffee, therefore, is the life and soul of Brazil and it is no wonder, consequently, that today this country celebrates the bi-centenary of coffee with pomp and circum-

stances only equal to royalty. That the coffee producing industry of Brazil is the basis of the whole Brazilian economic production is an undeniable fact. . . . . It stands to reason, therefore, that coffee is the basis of other production, for without the precious rubiacea, Brazil today would be a pauper country, in spite of its unequalled natural wealth. . . . . It (coffee) has been fostered from its very inception, and nursed as a spoiled child to the extent of making it the basis of the cultivated natural wealth, to the detriment of other production. The policy is, from a general economic point of view, open to criticism, for Brazil has neglected her other natural resources for the sake of one staple, which today represents 70 per cent of her resources. . . . . It is to be trusted, however, that this country will look to the future and give some attention to the general expansion, for other countries are becoming dangerous competitors and the day may come when Brazil may regret having neglected the development of other production.—*Wileman's Brazilian Review*, Rio de Janeiro, Oct. 13, 1927.

FIG. 5. A drying floor on which horses are used to scrape the coffee into piles. The slopes beyond are one vast coffee growing area.

These quotations in a nutshell give the importance of coffee to Brazil. Coffee is the life-blood and without it Brazil would be a pauper country. It is also true that the coffee industry has fitted into the natural conditions so well that other resources less easily and less profitably exploited have been partly or wholly neglected.

Since the concentration of this industry is largely in the São Paulo-Rio sections, and since these sections have been made so rich because of the coffee, the people of other parts of Brazil feel that they have been discriminated against and that they have little

to say in the general plans of the government. Thus minor revolutions outside of the coffee regions are not at all uncommon. The people feel that they could work out their problems so much better if they were not dictated to by these richer areas. The concentration of so dominant an industry into such a small part of an unusually large country has brought about many other political problems which seemingly cannot be solved. This concentration of a great industry has developed an intense sectionalism and a lack of unity which may bring about serious consequences ultimately. Thus it is that natural conditions have their political effect also.

This great Brazilian industry has been possible largely thru the great buying power in the United States. Altho we are not one of the largest per capita coffee consuming countries of the world, yet we import more coffee for our consumption than all the rest of the world put together. So big is our annual coffee bill that few other items can compare with it. In fact, for certain years coffee is the major item in our import bill. Equally striking is the extraordinary rate at which our consumption has increased. At the close of the Civil War (1866) our per capita consumption was less than five (4.96) pounds. By 1920 this had increased to nearly thirteen (12.78) pounds. The next census may show a considerable increase over this.[9] However, the consumption for the last half dozen years according to the United States Department of Commerce has been slightly on the decrease. The importance of this industry to Brazil may be more clearly appreciated when we realize that two out of every three pounds of coffee thruout the world come from there,[10] and that more than half of that which leaves Santos and Rio is billed for the United States.[11] Out of the total Brazilian exports of $219,495,000 to the United States in 1926, $187,893,000 were for coffee alone. So large is our coffee bill in our import trade that for certain years it has exceeded that of any other single commodity.

[9] "Today the leading country of the world in point of per capita consumption of coffee is Sweden (15.25 pounds); but Holland held that position for a long while." Wm. H. Ukers, All About Coffee (1922), p. 289. Based on the estimated populations and the imports of green coffee from 1923 to 1927 the per capita consumption in this country has been: 1923, 12.4 pounds; 1924, 12.2; 1925, 10.9; 1926, 12.05; 1927, 12 pounds.

[10] Seventy per cent. Wm. H. Ukers, All About Coffee (1922), p. 275.

[11] 53.3 per cent in 1926-27 and 53.5 per cent in 1927-28. *Wileman's Review*, Rio de Janeiro, Mar. 8, 1928.

THE FUTURE

All of this development in Brazil has come well within the last half century. In 1891-92 for the first time did Brazil produce over 7,000,000 bags, and the world total for the same year was 11,000,000 bags. For the first time also did the United States importation exceed 4,000,000 bags. The amount produced in Brazil increased rather irregularly until the banner production of

FIG. 6. A part of the grounds of the Santa Rita estate. The trees on the slopes beyond are what bring in sufficient wealth to make such grounds possible.

19,000,000 bags in the year 1906-07. This enormous total has not been equalled since nor has the world record of 23,000,000 bags for the same year been passed. The importation into the United States in that year for the first time also exceeded the 7,000,000 mark, about the same as Brazil's total production fifteen years earlier. As the total world importations for that year are given as 17,000,000 bags, there was a tremendous surplus in addition to an accumulated surplus of the preceding half dozen years. As a result coffee prices dropped to as low as five cents per pound in New York, scarcely paying handling and transportation costs, not counting planter's production costs.

This meant, of course, that coffee was being produced at a loss, yet the crop could not be reduced very materially as the trees kept on bearing, adding each year to the surplus. The cost of keeping up the plantations could not be diminished greatly and, therefore, the crops had to be taken care of even if at a loss. After a few such years the planters faced bankruptcy, as did also the government depending on this revenue. As a result there was evolved a scheme of government buying and storing until the price was sufficiently high to warrant putting some on the market. This system of price control has been called valorization and with some modification is in force today. However, at the present time, the price control is known as "the defense of coffee." It has become rather definitely known how much the world market will absorb, how much other nations will produce, and how much Brazil may put out on the market without breaking it. The amount permitted to leave São Paulo daily is limited to approximately 35,000 bags. With approximately 300 working days to the year, the total amount which may leave Santos and Rio annually is around 10,000,000 to 12,000,000 bags or a billion and a quarter to a billion and a half pounds. The effect has been excellent in boosting prices, but other nations are benefiting equally. If the grower has more than his allotment, he may store the rest in a government warehouse and borrow from the government a certain percentage of the value of the coffee stored.

This means, of course, that the future development of the coffee industry in Brazil is limited very definitely to approximately 12,000,000 bags, for the production during the past two decades, the period of government control, has remained practically the same. In the meantime, however, under this system of price control, other countries have been benefited and have been increasing their production. They are the ones who are having now the chance to increase their production to supply the world's increased demands thru increased populations or increased individual consumption. Brazil, therefore, is still holding its own, but other countries year by year are becoming more important and when they have the industry firmly established may become very serious Brazilian competitors.

However, coffee has a distinct advantage over other crops in Brazil and cannot be replaced there very rapidly. It has become popular, even in Brazil, to criticize the country for its great de-

pendence on the one crop to the neglect of others. Coffee, however, is so prominent not so much because it "has been nursed along like a spoiled child," as it is that no other crop fits into the conditions so well or is equally profitable. We, similarly, criticize the southern states because of their great dependence on cotton. When there is more cotton than the world can use, prices drop and there is widespread hardship. The same situation exists in

FIG. 7. Coffee on the way to market. Many of the fazendas have their railroad equipment on which the coffee is sent always in open cars. Beyond are giant bamboos and to the right are planted eucalyptus trees.

the corn and wheat belts. We have a corn belt, a wheat belt, and a cotton belt because natural conditions are such as to make this possible or even mandatory. Similarly, in the Rio-São Paulo region no other crop can displace coffee at present prices.

There are many reasons for this. In the first place, coffee is a tropical product and competitive tropical products that enter into international trade on a large scale are relatively few in number. On the Brazilian plateau no other agricultural product has been able to gain a very strong foothold. Cotton is grown but almost solely to supply the local cotton mills whose output is pro-

tected by a very high protective tariff. Tobacco is grown also to some extent but chiefly in the Bahia region where conditions are not very favorable for coffee. Sugar is widely grown thruout Brazil for local use, but the margin of profit in international trade is so small that unless a country has distinct advantages it cannot meet competition. All of these major products are keenly competitive in world markets because rarely is there a sufficient shortage to make the marketing very remunerative. Altho the annual value of either the corn or the bean crop in Brazil is greater than that of coffee, yet this is possible only because they are "supply" or food crops and not "money" crops. From no part of Brazil can corn compete with the Argentine crop. The conclusion is inevitable that coffee is so dominant in Brazil because it is found so remunerative.

Besides the matter of climate and soil, coffee, as a Brazilian crop, has a very definite advantage in its high values for its bulk. Thus far coffee has been the only agricultural product that has been able to pay the transportation costs and leave a fair profit to the producer when sold on the world market. The cost of transportation is not so much due to the distance from the sea coast as it is to the added cost of moving goods up and down over the 2600-foot escarpment.

General Conclusions

From what has been said, a few conclusions may safely be suggested: (1) Brazil is the greatest coffee producer in the world with nearly two-thirds of the world's production. Two-thirds of this production comes from the state of São Paulo. (2) the United States is Brazil's best customer, taking more than half of Brazil's total crop and nearly three-fourths of the coffee consumed in the United States is Brazilian. Coffee also makes up nearly four-fifths of Brazil's export to the United States. (3) This enormous production is possible because of the unusually favorable natural conditions. Other coffee growing countries can prosper and increase their production because Brazil is limiting its own production and artificially boosting prices. The Brazilian production has not increased for two decades. (4) Possibilities for expansion are so great in Brazil that should there be a sufficient demand the country could produce at least twice the amount the world now consumes. Should coffee restrictions be removed other

coffee growing countries unquestionably would suffer far more than Brazil. Parts of Brazil have grown rich because of coffee, but the industry has developed economic and political problems of such magnitude that unless solved they may threaten in the relatively near future the country's nationhood.[12]

[12] Write to the Joint Coffee Trade Publicity Committee, 64 Water St., New York City, for an excellent series of photographs with descriptions, sent free under the title, Coffee From Tree to Cup, an educational exhibit illustrating cultivation, roasting, brewing. The book already referred to, William H. Ukers, All About Coffee, is by all odds the best. Altho the price is $15.00, the book, as its name implies, is a perfect thesaurus on coffee with a bibliography of 1,348 titles.

See also Chester Lloyd Jones, The *Journal* Vol. XIV (Jan., 1916), pp. 129-134, Supplying the World's Coffee.

VISUALIZING GREAT BRITAIN*

ISABELLE K. HART

State Normal School, Oswego, New York

To an American teacher, perhaps the most surprising fact of British geography is the great number of clearly differentiated regions which are packed into so small an area. It becomes apparent immediately that the sciences of geography and geology are taken very seriously over there, and that indeed a change in just one geographic factor makes a recognizable difference in the character of human adjustments. Such careful division into regions is particularly a matter of interest to British students chiefly, and for the purposes of this article a much simpler division is adopted, under six headings, based rather arbitrarily upon the factors which most readily meet the eye: Scotch lowlands, Scotch highlands, Britain's grazing lands, agricultural England, great industrial and port cities, and smaller cities with the special appeal of age.

THE SCOTCH LOWLANDS

Clydeside, Clydebank and Strathclyde are three charming names for the long, narrow industrial area which fringes the river Clyde. It may be taking liberties with an orthodox Scotch idea to extend the application of these terms all the way out the Firth to the North Channel, but that is what Clydeside means to me.

* The data for this article were gathered during a Clark University Field Trip, headed by Pres. Wallace W. Atwood who was assisted in Great Britain by Prof. W. H. Barker of the University of Manchester, England, with twenty other British geographers co-operating.

At six o'clock of a Sunday evening, we passed Ailsa Crag, the first island-outpost of the Highlands, and then for hours steamed slowly up the Firth, with glorious views of the mist-hung ancient rocks, to port. In the relatively high latitude of the British Isles, mist forms readily at about the six hundred foot contour, characteristically veiling a broad belt of the mountains at that height and leaving the upper reaches exposed. A lingering Scotch sun-

set, turning the mists to gold as they rose against the bleak dark rocks, is an experience never to be forgotten. On the other bank, we could clearly see a Scotch farming land, level alluvial patches and green rolling hills, white sheep grazing, white roads winding toward the summits, long low stone farm houses ghostly white in the sunset light, green hedges and small plantation-patches of trees. On the evening of July 10, the long twilight lasted until nearly eleven o'clock by sun time, or nearly midnight by the advanced time which the British adopt in summer. As the Firth narrowed, farm lands gave way more and more to industry and commerce, and Clydebank became an endless chain of small towns engaged in steel manufacturing and the operation of tourist steamers among the beautiful highland islands of the Scotch west coast.

Tugs pushed our steamer up the narrow canalized Clyde to her dock at Glasgow, the commercial metropolis of Scotland. Before its canalization, the Clyde here could be waded, even by children, most of the year. Its deepening for commercial purposes has been a tremendous undertaking; dredges work every day of the year except Sunday, and the retaining walls are very expensive. A tributary, the Kelvin, enters the Clyde just at Glasgow and helps to supply water for the canal. The exact site of Glasgow is largely due to the fact that this is the lowest point on the river where a bridge can be built. Upstream a few miles are the coal fields which were, together with the iron deposits, the basis of Glasgow's iron and steel industries, called engineering in Britain. The invention of the separate steam-condenser by James Watt of the University of Glasgow was another factor in Glasgow's industrial development. The local iron supply is now exhausted and the coal is approaching exhaustion, but is still worked over an area eight to ten miles wide by fifteen miles long.

The coal mines are located on the valley slopes with grazing lands above and farm lands below them. The individual mines are small, but they are not far apart, and apparently they furnish work to many laborers who live either in two-room cottages or in tenements two to four stories high housing two to six families on each story. In some neighborhoods, long one-story houses shelter from nine to fourteen families each in two-room apartments with one chimney, door and tiny entrance hall for each family. Such houses are usually made of stone, otherwise of brick, and are either thatched or tiled. Chimney-pots add a picturesque touch; cellars

and porches are universally absent, but flowers and vines are trained over the walls, some fruit trees are trellised against the walls, and there is much care of the tiny pots of flowers around each door. Heaps of whitewashed stones or hedges usually enclose these gardens. Where town-planning has been introduced, attractive two-family villas may be seen with larger gardens of vegetables and flowers instead of the lawns of American towns. The coal-tips or refuse heaps from the mines are dreary spots on the landscape, and the mining towns are dull and uninviting, but far preferable to the Welsh mining towns of Taff Valley.

Part of the milk and fresh vegetables are locally produced for the Glasgow market, but not enough. Upstream from the coalfields there are a few small grain fields, but rhubarb, tomatoes and small fruits constitute the chief crops. Strawberries are grown intensively on a small scale, and under difficulties. Most of the plants seemed to have begun blossoming when we drove thru on July 11, and berries are ripe by the end of August or the first of September. Many of the fields were on such steep hillsides that one wondered how the pickers could walk up and down the rows. Long ropes were stretched across the berry beds with dangling strings to swing rags over the rows to frighten off the blackbirds and rooks. Tomatoes are ripened under glass in this vicinity; there are many extensive greenhouses. No artificial heat is used except for the first crop. In sheltered places, as along a wall with a southern exposure, tomatoes will ripen out-of-doors. The very long summer days of the north help in the ripening, altho the temperature is relatively low; for this reason, there is very little difference between the crops of the northern and those of the southern part. Most of the land is worked by tenants, but very small patches are sometimes owned by the farmers themselves. There are some raspberries, plums and cherries, very few apples, and no pears so far north.

Two common sights were branded cattle, and sheep with spots of dye on their heads and necks, for identification either in pasture or at market. Droves were frequently seen along the roads, and pens occupied much space in market towns. Haystacks and strawstacks were also common. Rope meshes terminating in tied-on rocks covered many of these stacks to prevent loss by wind; thatched roofs on poles sheltered others; galvanized iron roofs were occasionally seen on the stacks. The roofs shed rain.

Very few natural forests were to be seen in this region, but plantations were numerous and very dense.

All the roads seem narrow to American drivers, even the best or "A" roads, but they have excellent surfaces; usually there is a foot-path along one side and a high wall rising sheer on the other, frequently five or six feet in height. Automobiles are very few; bicycles common; bus service between villages is good, and has largely superseded tram service. Race courses, kept in beautiful turf, spoke of the popularity of horses. Hogs seemed entirely lacking; poultry was not plentiful; bees seemed to be included among the domestic animals.

There are no hydroelectric developments in Britain comparable to those of America in amount or in distance of transmission; near Lanark, a development of a ninety foot fall in a tributary of the Clyde makes about 11,000 H.P., which is transmitted down Clydeside. The lack of cheap electricity is reflected in the scanty street lighting, and in the very thrifty use of lights in the homes. Shop shutters are still put up at night, and illustrate the point further.

The mean January temperature at Glasgow (and in fact to the extreme north of Scotland's west coast) is 40° F., 20° higher than that of the Lake Plains of New York State; the mean July temperature thruout the lowlands is 58° F. (12° lower than that of the Lake Plains). Both temperatures are reduced to sea level. The rainfall decreases from more than 60 inches on the west to 25 inches on the east coast. In the vicinity of Glasgow, entirely rainless days are rare. Prolonged heavy rains occasionally swell the small streams and turn them to coffee-colored torrents, working havoc on the steep hillside fields.

The basin of the upper Clyde occupies roughly the middle third of the lowlands of Scotland, which are in no sense a true plain, but rather a great faulted area in the old rock formation, now reduced by erosion practically to a peneplain, with many small but well-marked alluvial plains and many small volcanic plugs. They are lowlands in the sense that they are chiefly below the 600 foot contour line.

In the western third the rainfall is too excessive for much agriculture, and grazing prevails with some dairying, while agriculture succeeds in the drier eastern part. Turnips, hay, oats and potatoes are the staple crops, the turnips being grown for the winter stall-

feeding of beef cattle which are shipped over in late Fall from Irish pastures. Sheep graze over the rough hills, but are fed in winter. No slovenliness is allowed, or indeed possible in Scotch farming. Large poultry farms and dairy farms occupy the rolling hills of the eastern third, with good pasture to the tops, and remind us of the Lake Plains of New York State, except for the high stone walls, the Scotch type of house, and the lack of orchards. Community gardens characterize the larger villages and the cities.

Stirling and Edinburgh have more interest historically than geographically, altho each owes its origin to the volcanic plug which gave the commanding view and practically impregnable position. Probably Stirling owes its more modern growth in part to the near-by coal fields and its iron and steel industries, and in part to the surrounding grazing and farming lands. Stirling in the summer of 1927 was not a pleasant city except for the charm of its memories and antiquities; it was depressing in its squalor and abundant signs of want. Lack of employment and industrial unrest were evident; yet those who were fortunate enough to have work were enjoying a Wednesday half-holiday by the very simple and healthful means of taking rambles or bicycle rides into the country. Indeed, holidays afoot and awheel, but not in cars, proved characteristic of the whole island. Britain's highways are usually accompanied by foot-paths and occasional benches under the spreading branches of old trees. The tiny tots travel on the fathers' shoulders and whole families spend a most profitable half-day in the fields.

The foregoing paragraph applies in some degree at least to most of the cities which we visited. In Edinburgh, the Royal Mile of bygone splendor is known around the whole world as a slum. Yet Edinburgh is a city of great charm, fine shops, beautiful homes and public buildings, and a city of great comfort and hospitality to the traveler. In its newer sections, its modern homes are most attractive, as are its streets and parks.

THE HIGHLANDS

To an American visitor, one of the most impressive facts about the famous Highland beauty spots and summer resorts is their proximity to the population centers, and the sharp contrast they provide for city dwellers. From Glasgow to Loch Lomond "as the crow flies" is only about ten miles, and as the road winds it is a

short and leisurely trip by char-à-bancs. One may breakfast in Glasgow and enjoy a picnic lunch in the early afternoon at the far end of Loch Lomond, which is about twenty-five miles long. He will see many bicyclists and many vacationists afoot, many camps along the shores of the lake, houseboats, motor boats, boarding houses and hotels at landing places along the shore. Except for these and the carefully laid stone fences along the excellently surfaced roads, the view is very wild—there are practically no all-the-year inhabitants, few permanent homes with barns and sheds. Steep slopes, thinly forested with acres of pink and purplish heather, but densely carpeted with tall bracken, purplish-pink foxgloves, yellow broom and gorse stretch abruptly up from the shore. Moss is very thick, even on the tree branches and the tops of the walls which it shares with grass and flowers. Heavy rains have made deep gullies in the hill slopes, almost impossible to cross laterally; slipperiness makes the hills difficult to climb. Trees are easily uprooted because of the thin soil mantle on the gnarled schists, hence fallen trees are very common. Scotch horned sheep occasionally add to the picturesqueness. Rabbits are plentiful.

This whole region has little economic value except for recreation. It formerly produced pit-props for mines, but now needs reforestation. Some quarrying for road materials is carried on; road work goes on continually, mainly because it relieves the unemployment problem—certainly not because of any great use of automobiles. This region is not traveled in winter, and the few permanent residents of the fertile glens (which were former lake bottoms) are entirely isolated.

On the east, the Highlands are a short half-day's drive from Edinburgh, and Callander is the eastern gateway to the Trossachs, forty miles farther into the Highlands. Trossachs means wooded place, and well merits the name; white birches with very small leaves predominate; moss is thick even on the branches; it seems the mossiest place imaginable. On the shores of Loch Vennachar are plantations of evergreens to commemorate the formation of troops in the battle of Waterloo. Streams springing from the hillsides in great numbers, so that many are seen at once, characterize the Highlands. In this part of Scotland, from Loch Katrine to Edinburgh, the Heart of Midlothian, the lover of Scott would want to spend at least a year, then take a further literary pilgrimage via Abbotsford and Melrose to the Lake Country.

THE GRAZING LANDS OF BRITAIN

The sheep is king over so large a part of Great Britain that the significance of the Parliamentary woolsack is even yet apparent. From Edinburgh, cross the southern uplands toward Moffat and Carlisle—about seventy miles by airline, twice that by char-à-bancs via Melrose, the Tweed and the Selkirk Hills—you will spend a long happy day, seeing many things; but your memories will all be linked with sheep. You will recall the small woolen industries of Galashiels on the Tweed; the stone corrals or keeps for lambing sheds which are very numerous—there were five in sight at one time. Small plantations of trees make wind-breaks for the sheep; even the stone fences are built with small arched openings for the sheep to run under; there are foot-bridges for man and sheep over the tiny streams. Houses, people, cattle and crops are few. There are tiny garden patches no larger than a house. The very thin soil and the thousand-foot altitude make crop growing for winter feed impossible; the sheep are sold off in the autumn to farmers in eastern England, where they tread under the wheat fields and crop the clover.

You will recall the beauty of the sheep land—dozens of springs coming out of the hillsides, with beautiful falls; the Gray Mare's Tail is 200 feet high. The tourists now are flocking in like sheep; perhaps they are more profitable to the natives.

About ten miles south of Moffat, in the Anan Valley, the soil is better and fertilized with lime, and the altitude is less; one sees oats, hay, potatoes, turnip, clover and cattle once again. But the interlude is brief. From Carlisle, it is a drive of only an hour or two either into the rugged Lake Country of Cumberland and Westmorland with its laccolithic dome of the Cumbrian Hills, or to the crests of the Pennines, and both are sheep lands. The charm of the English Lake country is well known and not overstated. The landscape is much like that of New York's Finger Lake region, but grander because its heights are mountains—altho they are not very high: Sca Fell's altitude is 3210 feet; Skiddaw's 3053. Grazing is here a considerable occupation altho much of the mountain sides is forest covered.

To natural beauty is added the charm of the past in the market places, old town halls, old-time houses and furnishings, in the traditions of its earliest settlement by the Scandinavians who used the heights as their places of doom and execution, and in the liter-

ary associations. Here flock tourists and summer vacationists, altho the annual rainfall is about 100 inches and clear days are rare; artists, antique dealers, bus and boat excursions follow. Keswick is an English Interlaken between lakes Bassenthwaite and Derwentwater. Lake Thirlmere is a reservoir for Manchester, ninety miles away. Lake Grassmere, beloved of Wordsworth, is the scene of the annual Grassmere Race, when dalesmen compete in a run to the top of Mt. Helvellyn; big bleachers accommodate the spectators.

But to see sheep in undisputed possession of an area, one should cross the Pennines. There are dreariness and almost desolation for miles. The Pennines are rounded, with no summit peaks, but an altitude along the crests of 2,000 to 2,500 feet. There is no depth of soil; because of the wind-sweep, poor soil and the altitude (one must remember that the latitude is 53° to 55° north) there is no forest but a few small planted clumps for windbreaks. Grazing is the only possibility on the upper slopes. A belt eight miles wide occupies the heights between the cultivated fields on the west and those on the east, and extends for many miles north and south, except where some river makes a break. One sheep to three acres is the limit of feeding here; one common shepherd is paid by common taxes. Houses are exceedingly far apart. A No-Man's Land of 3,000 acres begins six miles north of Carlisle where a strip ten miles long has been involved in a boundary dispute since Queen Elizabeth's time; it is of no value, and is sometimes called the Highwayman's Trysting Place. The gray-white limestone has been built into exceptionally high walls, and lime kilns are common. Shales are mixed with the limestones here but are much poorer; they show on the landscape as darker patches with coarser vegetation. The rental of the limestone fields is about double that of the shale.

People have been snow-bound on the tops of Pennines in June; frost is probable any night in the year. Posts are placed beside the roads as markers so that from any one, two others can be seen; this is because there are peat bogs on either side which make laborious and dangerous going.

In extent, the Pennine Highland is the greatest in Great Britain. On any east-west dale, the northern wall with its southern exposure supports cultivation much higher than the opposite southern wall with its northern exposure.

The Grazing Lands of Wales

Altho the mountain sides of northern Wales are well wooded, the rolling lands and valleys of the region are largely grazing lands. Llanidloes is a railway town typical of the area, which has grown up at a meeting of the valleys with tanneries and woolen mills—the latter often operated by water power. It is a market town for live sheep and has built up an interesting export trade of mutton, sent by parcel post to the amount of 1,000 tons annually. The Welsh herdsmen, like the Scotch, sell off their sheep in autumn because there is little arable land and no winter feed. The farmers of eastern England, in their rotation of crop scheme have no room for stock in summer, but welcome them in winter to eat clover, trample and manure the soil. Where levelness and depth of soil permit, Wales is fairly hospitable to agriculture, and hay, oats and dairy cattle are to be seen. Everywhere in the British Isles the American traveler misses the cornfields which are so typical of our dairy regions but which can never be in Britain, because of the too-cool summer.

The collieries of Wales which are so well-known the world over really occupy a very small space—a narrow wedge in northern Wales close to the border, and a broader band in the south comprise the coal lands. Those of the Taff Valley are mentioned later. We passed a few lead mines still operating, and fluorspar is being gotten out for use as a flux with copper.

The steep, narrow valleys of Wales deserve mention; roads cross them on viaducts to avoid the steep grades. No picture of Wales is complete without a glimpse of the shore-line. Aberystwyth is a beautful little seaside city with fine hotels on the beach, and a sweep of curving coast on Cardigan Bay which is magnificent when the sun sets on a clear evening. We had the rare good fortune to see the whole line of the bay and distant Mt. Snowden —an opportunity which the Welsh professor assured us came only about once in six months. Cardiff must also come into the picture as most like America of all the British cities, with its wide, clean streets and modern buildings.

The Grazing Lands of England

Coming out of Wales into England, one sees the Cotswolds, the Oxford Downs, the Dorset Heights, the South Downs, the Hampshire Downs and the Shropshire Downs, each of which has

given its name to a breed of sheep. Indeed, sheep are a characteristic feature of every English rural landscape except on the Fens, in Surrey, Kent and Sussex. The chalk downs are treeless, windswept slopes with rounded outlines and varying heights; near Marlborough the tops range from 700 to 900 feet. The valleys are due to erosion but are streamless because of their porosity, and never have surface drainage except in winter. The sub-surface drainage is enormous; analysis of Thames water has shown it must be carrying away in solution at least 140 tons of chalk annually from each square mile. The water-table here has fallen sixty-six feet since Roman days, as is shown by Roman wells which now do not touch water, and by molluscs in the bronze-age barrows or burial places which are common here. Sheep-folds and water-meadows are the two characteristics of the down farming. The fields are never water-logged or very cold because of the absorbent layer of chalk below, so naturally watered valleys of the winter streams supply early grass for sheep in April and May. Much land on the chalk is also used for exercising the valuable race horses which are brought up by Pullman trucks de luxe, with attendants.

This chalk land with its high visibility and wide horizons is the scene of history which dates back probably to 1800 B.C., and which has left the Avebury Circle, mother of Stonehenge, as a memorial. An iron-age camp stood here in 400 B.C. The huge white horses cut into the hillsides are startling landmarks, but not significant historically. The white chalk exposures interest the traveler, and the flint which occurs with the chalk is much used locally in masonry with interesting results, and in road making with some damage to tires. This is the one part of England which has neither hedges nor stone walls, and is practically unfenced; some wire fences do appear.

The New Forest, a few miles west of Southampton, is a piece of grazing land which must be mentioned, altho not for sheep. In England, "forest" does not necessarily mean woodland, but is derived from fores, without the law, and means a public plain or heath under the rule of the King. The New Forest is such an area, very flat and poor in its soil, largely covered with heather and holly, but with occasional woods. Here the grazing of ponies has long been carried on, the ponies being branded and turned out much as cattle are treated on the ranges of our West. Hitherto, they

have had a good market for haulage in the mines, but the demand is much less now. This New Forest area is now beginning to be used as a suburban development, but cars still stop to open and close the gates across the road at each entrance, to prevent the escape of the ponies.

AGRICULTURAL ENGLAND

The real farm lands of England are in the east and south, with two regions which are of special interest: the Fenlands and the area made up by the counties of Surrey, Sussex and Kent. It is here that one first sees a crowded population. England has forged ahead of Belgium in density of population, and now boasts, or deplores, the fact that it is the most densely populated country in the world, with more than one person per acre, or just 658 per square mile, at the last census. The Fenlands are a large flat area, perhaps fifty miles square, of one-time marsh, now expensively drained by a system of canals and ditches very similar to that of Holland. The number of windmills makes the landscape very suggestive of Dutch farm lands. The soil is rich, fine and level. All conditions favor extensive agriculture, and land is very valuable. Potatoes are the big crop, with pigs as by-products, fed on the small potatoes. Barley, wheat, beets and peas are also extensively grown. There are apple orchards with rhubarb between the rows, raspberries, currants, cabbages and hay. Bulbs and seeds are produced largely. One potato farm of one thousand acres pays an annual drainage tax of £700. Here and there among the Fenlands, a residual gravel mound appears, relic of glacial times, covered by an ancient city which sprang up before the Norman conquerors began the drainage, when the heights were the only places useful to man. Ely is such a city; its name means island, and in its beginning, it was an island in a marsh land. Many small marshes still remain, breeding places for mud hens. Road building across the Fens is very difficult; only two good roads have been built across this region. The Fens remind one of the muck lands of New York State because of their drainage problem and intensive use, and also of Long Island and the Hudson Valley for the latter reason.

Kent, Surrey and Sussex, immediately southeast of London, is the fruit land with apple, cherry and plum orchards, small fruits, and plenty of hops, beets and truck crops. It looks much like the general farm lands of New York State, except that the English

farms are uniformly cultivated intensively; no space is wasted and nothing is allowed to be out of place.

This eastern and southern agricultural England is the densely populated part. Rural homes are close together; villages are almost continuous in many parts. All the environs of London are rapidly being drawn into one great municipal area or conurbation.

THE CONGESTED DISTRICTS

Nothing in the picture of rural England thus far presented would give the impression of great density of population. So many of the towns are really small towns, the country homes as a rule are small, and so much interest attaches to the unpeopled ruins of castles and abbeys; the occasional large estates are so immense that thruout the north and west the visitor gains an impression of abundant space. A few visits to the industrial and mining centers change one's mind. The Taff Valley coal mining district of south Wales is a small but highly congested region. The mine workings are on the sides of a very narrow, V-shaped valley, with barely width enough at the bottoms for the stream and a railway, a narrow highway and tram line just above, and long rows of brick and stone houses set into the hillside. There is scarcely width enough to permit light and air to enter; coal dust and gas fill the air. The view across the gap is of smoking collieries; above there are only the barren hillsides unfit for grazing or agriculture. Nothing but dissatisfaction can be felt by dwellers in such a crowded place.

Leeds, the great woolen center, presents another crowded picture, and has an acute problem in the housing of its 450,000 workers. It has many large slum sections and a tremendous number of "back-to-back" houses lacking sanitary provisions, and having public facilities at the ends of the streets. The city is built on a series of high hills with steep valleys so that cross streets are impossible from ridge to ridge. The better homes are on the ridges; the factories with the workers' homes are in the valleys because of the water supply there from the river, for washing and bleaching the wool. The planning of accessible suburban sites is a pressing problem. The growth of so large a city on such a peculiar site is due to the coal deposits, the water and the head of navigation of the canalized Aire which takes shipping of eight to nine feet draught, as well as to the early start with local wool. By far the greater

part is now imported. Leeds is the center of a closely-knit group of manufacturing cities, or conurbation, totaling 3,500,000 people.

Manchester, on the western flank of the Pennines, is the center of a similar conurbation of 4,500,000 people, chiefly interested in cotton manufacture and allied industries, such as making specialized machinery. The millstone grit capping of the Pennines is the key to the woolen and cotton industries because the controlling factor is the amount of cheap, lime-free water for bleaching and dyeing. Where the thick cap of millstone grit is preserved for a percolating basin, innumerable springs rush out on either side, and the streams are dammed and ponded. The water rights are exceedingly valuable; one private reservoir of one and a half acres was recently sold for one million pounds. All rights not privately held have been acquired by the Manchester Cotton Association. The reservoirs and small villages extend for miles outside of Manchester. This city is on a coal area and is served by the Manchester Ship Canal, 28 feet deep. Typically, each factory performs only one operation in the manufacture of the material, so goods are hauled thru the streets from factory to factory from five to eight times before they are finished. Horse haulage is very important because of the short hauls. The building up of this area was hampered by a large region of moss where a glacial lake once lay, gaining successively lower outlets and leaving swamps and marshes. Building is continually going on here, altho the foundation is poor.

Birmingham area, the black country, is impressive with its iron and steel foundries; Newcastle area or Tyneside with its coal shipping and iron and steel works; Liverpool with its great commercial development. London of course is in a class by itself and represents a great variety of interests. These complete the list of the very great cities of England, tho the cities of the next class are much more numerous, and large enough to command respect for the density of England's population. This class includes many port cities as well as manufacturing towns. All are alike in making intelligent attempts to solve the problems of the living conditions. All are acquiring charming suburbs with detached or semi-detached houses and beautiful small gardens. All are alike in sheltering fascinating nooks of great antiquity and historic and literary interest.

THE SMALLER OLD CITIES

No picture of England is complete without a mention of the large group of charming old cities which exist chiefly or largely for some non-industrial reason: especially the great university towns, Cambridge and Oxford, and the old cathedral cities, such as Lincoln, York, Canterbury, Chester and Durham. To most travelers, the art and historic interests of these cities are paramount; but there is much in each to hold the geographer's attention as well.

Lincoln is typical of 80 per cent of the small old cities and villages. The old city is built well up a hillside, about two hundred feet higher than the surrounding plain, to escape the floods and keep out of the marshy forests of the lower lands, yet far enough below the summit of the hill to be on the spring line, below the cap of gravel. Here stand the cathedral and the old town within what remains of the old city wall, part of which dates to Roman occupation. Around the old city and below it, since men now control the river and drain the lowlands, is the newer city with its breweries, mills and manufactures of agricultural implements. The hill between the old and new parts is a difficult climb on foot; impossible on some streets for cars. Of course the cathedral spires are landmarks for miles around. Altho it is Low Town, the new part, which functions most in the economic life of the countryside, it is High Town, or Old Town, which attracts tourists; and it has a great economic importance for that reason. Age and art are its chief resources and it is fascinating to see how the dozens of quaint old cities are conserving and living upon the resources of their antiquity.

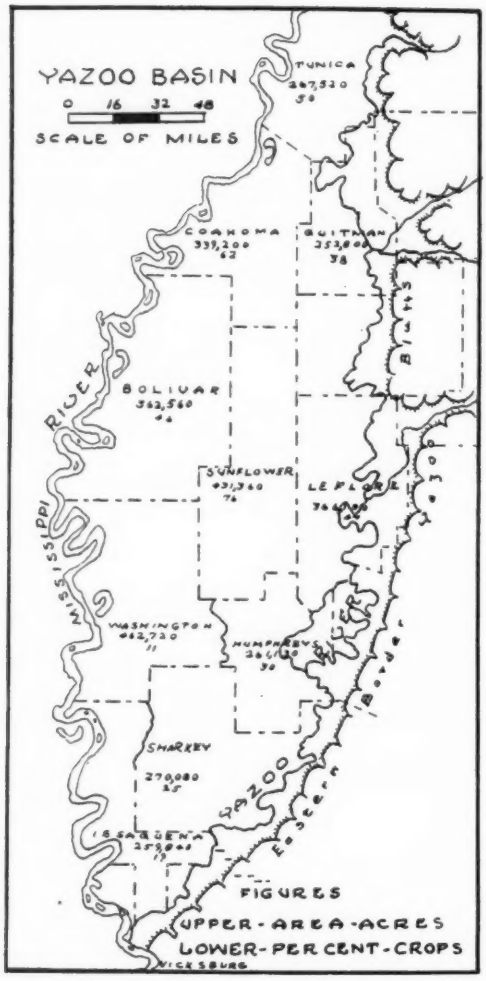
Whether the traveler's chief interests be science, history, industry, art, education, or rest and recreation, Great Britain can abundantly supply all desires, and well rewards the efforts of all its hordes of visitors.

THE YAZOO BASIN IN MISSISSIPPI

FERN ELLISON DORRIS
Georgia State College for Women, Milledgeville, Georgia

HISTORY, CHARACTER AND SIZE OF THE YAZOO BASIN

The Yazoo River basin, commonly known as the Yazoo Delta or simply the Delta in western Mississippi, extends from Chickasaw Bluffs at Memphis, Tennessee two hundred miles southward to Walnut Hills near Vicksburg, Mississippi. The western border is the Mississippi River and the eastern is a chain of two hundred foot bluffs. The area of the Yazoo Basin is 7,110 square miles, drained entirely by the Yazoo River since no stream larger than a bayou enters the Mississippi from the mouth of Wolf River in Tennessee to the mouth of the Yazoo just above Vicksburg.



Geographically and topographically this area is a distinct contrast to the remainder of the state. It is a low-lying expanse without prominent features. The altitude at the Tennessee line is barely 200 feet above sea level, while that of Vicksburg is only 100 feet. It its primeval state it was a land of low ridges, flats, cypress swamps, cane brakes, sloughs, and bayous, covered everywhere with a great hardwood forest of sweet gum, sycamore, oaks, tulip poplar, pecan, maple, hickory, walnut, ash, hackberry and cypress, festooned with creepers and clinging vines of grape, Virginia creeper, and mus-

cadine, and under which grew thick growths of cane and shrubs. Thru this forest roamed the manifold wild life indigenous to the section. What a rendezvous it must have been for the Indian tribes —the Chickasaws and the Choctaws—who inhabited this hunting ground!

ORIGIN OF THE BASIN

The Yazoo Basin or Delta is for the most part an extension of the flood plain of the Mississippi River. The interior is intersected by a veritable maze of streams as winding in their course as the Mississippi itself. The Mississippi in time of flood, before the advent of the levees, often discharged some of its waters into these streams, finally to regain the main river lower down by way of the Yazoo River. If the flood was of a seriousness to over-tax these channels the waters would gradually spread out over the lower lands, filling the lagoons, sloughs and brakes, in the end to inundate the entire Delta, with the exception of the highest ridges. These were seldom covered.

SOILS OF THE DELTA

The depth of the alluvial soil of the Basin varies. In general it tends to become less toward the highlands on the east. Some estimates place the average depth at two to three hundred feet; by many authorities it is given at much more. Everywhere it is of surpassing richness. The humus has been added as regularly as the minerals since each overflow would place a coating over the plant life, which was augmented by the leaves from the trees and the undergrowth.

The Yazoo Basin soil is commonly considered to be entirely alluvium, but there is one very narrrow band that is colluvial. The escarpment of the plateau to the east, standing high above the surface level of the Delta, is composed of loess, and at one time no doubt presented an unbroken front to the lowland. The natural action of wind and running water has deeply dissected this solid escarpment and reduced it to a series of bluffs. The loessal soil, brought down by the streams and surface wash, from the escarpment forms a distinct strip about a mile wide extending along the eastern border of the province. This colluvial belt is easily discernible since it is a little higher than the general surface of the Basin.

LAND OWNERSHIP AND LABOR

From the very earliest settlement the Delta tended to be a region of large plantations. Cotton planters, with their slaves, came, in the years between 1825 and 1860, from the wornout lands of Maryland, Virginia, North and South Carolina, Georgia, Tennessee, Kentucky, Alabama, Louisiana, and Mississippi itself to establish the counterpart of their former home in this new country. This they did to the extent that was possible on wild lands. Mr. E. N. Lowe, State Geologist of Mississippi, says of present conditions, "Nowhere in Mississippi have antebellum conditions of land holding been so nearly preserved as in the Delta. The land is held in large plantations, several hundred to several thousand acres in extent, which are devoted almost entirely to cotton growing and are worked entirely with Negro labor."

COTTON CULTURE AND CLIMATIC FACTORS

The first settlers in the Yazoo Basin in 1828 were actuated by the desire to open up cotton lands; one century later in 1928 new ground is still being hastily and earnestly redeemed from the wild state for the very same purpose. The planters early became cognizant of the fact that the soil and climate would produce a superior fiber. Phillips, in his *American Negro Slavery,* says, "Cotton tended to have a longer fiber, ranging, particularly in the district of the 'bends' of the Mississippi north of Vicksburg, as much as an inch and a quarter in length and commanding a premium in the market." Cotton from these bends came to be known as "Benders" in the New Orleans market where it was sold. "Benders" is still known in the cotton trade. Today the Delta is the center of the long staple cotton production of the United States as it contains more than 30 per cent of the long staple acreage of the entire nation.

This section from the very first has produced cotton as its sole commercial crop. The soil and climate suit the plant admirably. The soil is proverbially productive and some of it has been under cultivation for more than half of a century without rest or fertilizer, yet renders excellent returns.

Climatic factors in this region seem to be extremely favorable for the production of cotton, as judged from a comparison of the yield in other cotton-producing areas of the world. These factors in general are: sunshine, temperature, wind, amount and distribution of rainfall, and humidity. Separately and collectively they are

conceded to have a profound influence upon the growth and production of the cotton plant. Being of a tropical nature this plant revels in abundant sunshine and the accompanying high temperature. Authorities on cotton culture agree that it must have warmth, especially while the plant is young, and during the period of rapid growth which extends in this section usually until August. In the early stages the plant needs the sunshine interspersed with rain, but when the blossoms appear sunshine is *sine qua non*, while the rain may be almost dispensed with due to the fact that it prevents pollination, also tends to make the blossoms drop. The Yazoo Basin receives an average of 60 per cent sunshiny days out of the year. Altho cotton will grow in regions where the summer temperatures are not excessively high, the optimum requires a gradual increase of the daily temperature until about two months of around 95° are secured in July and August.

Cotton growers in the Basin state that on the whole six months of warm weather is necessary, out of which four months must maintain a uniformly high temperature. This definitely regulates the planting of cotton, for to plant too early in the season is to expose the young plants to dwarfing from the cold nights. In the Yazoo Basin the summers are long and hot with high relative humidity. In July and August temperatures of 100° and over are registered, with generally about fifty-five days that have a maximum of 90°. The frostless period extends from the latter part of March until around October 30, which gives the planters the requisite duration of warm days.

As far as moisture is concerned the cotton plant does not seem to be so exacting, since, in the United States, its culture extends from western Texas to the Atlantic coast, which gives it a range of from twenty-five to sixty inches annual rainfall. With irrigation it will grow in regions of much less yearly precipitation. Distribution of rain is quite as important as the amount. The spring months should have frequent light rains. The summer should be characterized by rains of the thundershower type, preferably at night. Late summer and early autumn should be relatively dry to hasten plant maturity and for ease of gathering the crop. The average annual precipitation of the Yazoo Delta is between fifty and sixty inches. December, January, February, and March are the wettest months, due to the passage of southwestern storm areas. The summer months are attended by local thundershowers; sometimes as high as fifty storms of this type are reported in

one summer. The autumns are likely to be dry, especially the month of October, which frequently has less than two inches precipitation.

Wind plays a minor part in the production of cotton; however, hot, dry, continuous wind is destructive since it induces excessive evaporation. The winds of the Delta are considered light. In the summer they tend to be from the southwest, and in the winter from the northwest. Winds are most destructive to cotton when they occur in conjunction with a beating rain during the picking season when quantities of lint are torn out of the bolls and beaten into the ground. One storm of that character has been estimated to do a million dollars worth of damage to the crop in the single county of Coahoma.

Ten counties lie wholly within the Basin: Tunica, Coahoma, Quitman, Bolivar, Sunflower, Washington, Issaquena, Leflore, Sharkey, and Humphreys, while seven others are partly in the Delta and partly in the upland section: Panola, Tallahatchie, Grenada, Carrol, Holmes, Yazoo, and Warren. Most of the statistics in this paper deal with the ten counties whose territory is entirely alluvial. These counties produced 443,462 bales of cotton in 1924, even tho a large percentage of the land was not cropped.

This section is wedded to cotton culture; a union so natural that it is doubtful whether it can ever be dissolved in spite of the warnings given and the low price of the staple. Recommendations for a limitation of cotton acreage together with an increased production of foodstuffs were being advocated as early as 1848. Thruout the succeeding years the same "tocsin" has been sounded to no avail. The Delta is still a one-crop section. Experiments carried on at Stoneville Experiment Station in Washington County show that practically all temperate zone crops may be grown in the Yazoo Basin, but as long as cotton will produce so abundantly to the acre, and as long as Negroes constitute the available labor, it is going to be difficult to convince the average planter that it is worth his while to engage, to any great extent, in the attempt of producing any crop besides cotton on a large scale.

Minor Crops of the Basin

Corn has always been grown in this region, yet has never been raised for commercial purposes. As the slave's diet consisted mainly of corn bread, bacon, and molasses, probably corn at first

was introduced mainly as food for him. Yielding fairly well it continued to be planted for grain for the livestock; however, never in sufficient quantities to take care of the need. The early planter regularly received shipments from the Old Northwest of corn, as well as bacon, on the steamboats of the Mississippi. Today his corn arrives via the railroad. In spite of the fact that the Negro, as it were, has been brought up on corn, he has never understood corn culture. He does not show a natural affiliation for corn as he does for cotton. It may be that corn growing requires more scientific methods than cotton. The condition remains that as a general rule the Negro is more successful with his cotton crop than any other that he attempts to plant. In 1919 there were produced, on 311,541 acres in the Delta, 5,756,166 bushels of corn. In the same year Iowa, outstanding as a corn state, produced 587,942,317 bushels on 16,308,149 acres.

Like corn, hay also has always been a minor crop in this region. Similarly it has always been shipped in and still constitutes a heavy item on the debit side of the books of the cotton planter. However, more hay is being harvested in recent years. The term hay as used here comprises hay of all kinds: timothy, clovers, alfalfa, small grains, annual legumes and wild grasses. In 1919, 50,804 tons of hay were harvested on 28,159 acres in the Basin. Wisconsin, a typical hay state, cut, in the same year, 11,489,227 tons from 4,495,988 acres. The cow pea has long been a favorite. Alfalfa does exceedingly well; five cuttings a year yielding one to one and a half tons to each cutting, are common. Lespedeza and many of the clovers make prime pastures. Soy beans are proving successful on the Delta soil. It may be that in the years to come this region will be self-sustaining in both corn and hay with some to market.

MARKETS OF THE REGION

The question of markets has been, from the beginning, a simple one. Since the planter had only the one staple—cotton—to dispose of, and his crop being produced on the credit system, he had usually very little choice as to where to ship. At first all cotton went down the river by boat to New Orleans where it landed on the wharf at Levee Street. Being consigned to the broker who had advanced the money for the making of the crop, he took charge. As a rule he sold it at his own discretion. Some time near the close of the year the planter would make a trip to the southern

port where he would have a settlement with his factor, and at the same time make arrangements for financing the crop for the ensuing year.

The credit system is in vogue in the Basin today; surviving agitation for a cash crop since before 1848. An institution that has persevered over such a period of time is likely to be permanent unless some colossal cataclysm involving land ownership and labor would justify a change.

Cotton today is marketed principally in Memphis. The steamboats still carry much of that grown in the river counties. The railroads carry the major portion, altho there is an increasing tendency to truck the bales direct to the city. Sales are made also to local buyers, local merchants, cotton shippers, and sometimes local bankers. There is some indication that the cotton factor, *per se,* is passing to give way to the local merchant or banker who advances the capital to the planter. It may be that some of the slave-owner planters continued practices brought with them from their early homes in the Tide Water region. Some of the present-day large plantation owners ship direct to London or Liverpool, from which they receive daily cables during the cotton selling season. Of the entire number of planters, these are a very small percentage as only the very large plantation owners, doing business on a tremendous scale, can afford this connection.

THE FUTURE OF THE YAZOO BASIN

One hundred years ago the Yazoo Basin was a wilderness, covered with a dense forest, traversed by many winding, tortuous streams, subject to almost annual overflow by the Mississippi River, without roads or even trails, peopled only with wild beasts and fowls. Three generations of inhabitants have wrested from nature a domain which approximates an empire in extent and constitutes a national asset in its producing ability. The area is covered with a network of railroad lines and is dotted with towns. Excellent highways of gravel and concrete cross the region, while the principal centers are connected by both bus lines and railways. The civilization that is here represented is dependent for its existence, prosperity, and advancement upon the wealth gathered from the soil, principally in the form of cotton.

Other nations seek abroad for possible cotton areas, while we have lands as yet untouched. The Yazoo Basin contains 2,000,000

acres listed as uncropped, which are as fruitful as those now under cultivation. Perhaps it will be many years before the Delta reaches the maximum of production and attains the zenith of development, yet it is certain to contribute much to the world from its great wealth, surpassingly fertile soil, together with unparalleled climatic factors, augmented by an intelligent, industrious and progressive population. The future bids fair to be exceptionally promising.

WHAT DO YOU KNOW NOW ABOUT THE YAZOO BASIN?*

I. A Completion Test

History, Character, Size and Origin of the Yazoo Basin

Directions: Fill in blanks so as to make each statement a true and complete sentence.

1. The Yazoo River basin extends from ..... Tennessee to ..... Mississippi.
2. The western border is the ..... River and the eastern is a chain of .....
3. The area of the Basin is ..... square miles.
4. This area is a distinct contrast to the rest of the state both ..... and .....
5. In its primeval state it was covered with a great ..... forest.
6. It was the hunting ground for two Indian tribes—the ..... and the .....
7. The Yazoo Basin is an extension of the flood plain of the ..... River.
8. Many winding ..... intersect the interior.
9. In times of flood the Mississippi often discharged some of its waters into these ..... before the advent of .....
10. The highest ..... were seldom covered by .....

II. A Multiple Choice Test

Soils, Land Ownership and Labor

Directions: Read the textual material on "Soils and Land Ownership" and then *underline* the word or group of words which make the statement correct.

1. The depths of the alluvial soil of the Basin is very shallow, deep, varied.
2. The colluvial soil lies next to the river, in the middle of the basin, next to the escarpment.
3. Everywhere the soil is very rich, sterile, compact.
4. The escarpment to the east is composed of drift, alluvial, loess, sandy loam.
5. This soil was brought in by winds, streams, high waves, ice.
6. The Yazoo Basin has always been a region of small farms, large plantations, great ranches, large farms.
7. Most of the work is done by white men, Negroes, Indians, the women.
8. The leading industry is growing corn, rice, cotton, sweet potatoes.
9. Many slaves were brought into this area in early days from Virginia, Vermont, Kentucky, Missouri.

* Prepared by Ida Mackie at the University of Nebraska under the direction of Associate Editor E. E. Lackey.

III. A True-False Test

Cotton Culture and Climatic Factors

Directions: Put a plus sign (+) before each statement that is true and a zero (0) sign before each statement that is false.

( ) 1. All land of the Yazoo Basin is planted to cotton annually.
( ) 2. The fiber of the cotton averages over one inch in length.
( ) 3. This area produces over 50 per cent of the long staple cotton of the United States.
( ) 4. This cotton from the Yazoo Basin is known as "Benders."
( ) 5. The soil and climate favor the production of a superior fiber.
( ) 6. Excellent returns are realized from the cotton.
( ) 7. Much rain is desirable during the blooming season.
( ) 8. This area averages over 70 per cent sunshiny days.
( ) 9. Cotton requires at least six months warm weather.
( ) 10. The summers are short and hot.
( ) 11. The relative humidity is low.
( ) 12. The frostless period extends from March 1 to about November 1.
( ) 13. Cotton must have over 40 inches of rainfall annually.
( ) 14. The cotton plant is grown from western Texas to the Atlantic Ocean.
( ) 15. The Yazoo Basin has over 50 inches of rainfall annually.
( ) 16. The "picking" season should be relatively dry.
( ) 17. December to March, inclusive, are the driest months.
( ) 18. Autumn is usually the wettest season.
( ) 19. The winds in this region are generally high.
( ) 20. Winds tend to be from the southwest in summer.
( ) 21. The winds tend to be from the southeast in winter.
( ) 22. Local thundershowers are common in summer.
( ) 23. Sunflower and Leflore counties are the only ones that lie wholly within the Basin.
( ) 24. The Delta is practically a one-crop section.
( ) 25. Temperature zone crops will not grow well in this area.

IV. An Assisted Memory Test

Minor Crops and Markets of the Yazoo Basin

Directions: With the assistance of the words listed at the end of the section fill the following blanks:

1. Corn has never been raised for ..... purposes in this area.
2. Corn furnished the main ..... for the slave.
3. The early planter received corn from the Old ..... by steamboat.
4. Today corn is brought in by the .....
5. Corn yields ..... per acre in the Yazoo Basin than in Iowa.
6. Hay is also ..... in to this area.
7. The term hay includes alfalfa as well as .....
8. Sometimes as many as five crops of ..... are cut in one year.
9. The Yazoo Basin may become ..... in corn and hay in years to come.
10. Cotton is often produced on the ..... system.
11. Formerly all cotton was sent directly to .....
12. Today cotton is principally marketed at .....
13. Some large plantation owners ship directly to .....

14. Cotton is the principal source of the ..... of this area.
15. Cotton has not reached its ..... production.
16. The Yazoo Basin has a rather ..... future.

Score, number right .....

wealth	alfalfa	less	Memphis
self-sustaining	commercial	small grains	credit
New Orleans	diet	maximum	Northwest
bright	railroad	London	shipped

NEW YORK MEETING

NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

The function of the National Council of Geography Teachers is to study problems of geographic education, and the New York meeting was outstanding in the number of papers presenting the results of research in this field. Studies now in progress cover the field from the elementary school to the curricula of college and university. All papers were constructive in the suggestions presented, but a few papers presented critical analyses of the weaknesses of certain educational proposals, which doom these proposals to ultimate failure. Research studies needed immediately were outlined by Professor Stull of Teachers College. These include the following: (1) What are fundamental principles? (2) What are the objectives for grades VI to IX? (3) What place shall geography have in the curriculum and what shall be taught in each grade? (4) What are the learning difficulties in geography? (5) What are the reading difficulties? (6) What are the map-reading difficulties?

The Presidential Address by Professor L. O. Packard of Boston dealt with "Geography and World Citizenship," and centered on the thesis that intimate knowledge of the people and conditions in other lands leads to closer relationship and sympathetic understanding. Peace and friendship are considered desirable not only as ends in themselves, but as essential factors in all prosperity and progress. A better world understanding is based on four essential foundations: improved methods of communication and transportation, the necessity for greater economic interdependence, the ideals of peace and friendship inherent in all peoples, and the possibility of instilling into the minds of youth the desirability of world peace. Professor Packard holds that our greatest hope of

world understanding lies in the hands of youth since youth has not the great disadvantage of being hampered by tradition and precedence. It is free to break with the past, to mark new courses, to build upon an entirely new foundation, and is not embittered by past feuds and unsatisfactory settlements. Realizing the part that youth must play in bringing about a new world edict, the teacher must lead the student to see the need and the possibilities of world understanding. Good citizenship means a regard for law and order not only in the community, but in the world at large. In order to be a good citizen of his community, his state, and his country, one must recognize fully his obligations to the world as a whole.

The same theme was quite independently reflected in the preliminary report of the committee on geography in the high school, which presented a tentative outline of two courses for the high school namely, "Political Geography of the Major Nations," and the "Geography of Man's Work." The first course deals with the geography of the major problems of the major nations. The emphasis is upon the geographic and historical study of these problems, and the adjustment man has made and is making in solving or attempting to solve them. It is a course in world citizenship in which the basis of organization is the geographic or politico-geographic region, and the emphasis in interpretation is geographic. The second course is designed for those senior high school pupils who elect courses in home economics, shop and the trades, and commerce. The work for the year is grouped under five heads: world climate, world resources, world production, world transportation, and consumption.

A similar report on better world understanding was submitted by President W. W. Atwood of Clark University, who represented the National Council at the International Geographical Congress held in London and Cambridge in July, 1928, where between thirty and forty nations were represented. Dr. Atwood's report notes that nearly 500 were in attendance and all the leading nations of the world, except those of central Europe, were represented. These nations now understand that a cordial welcome awaits them, and it is the hope that in 1931, when the next Congress will be held in Paris, all nations in which geographic studies are in progress will be members of this international organization. The papers read were grouped under physical geography, cartography,

mathematical or historical geography or exploration. The British Government and the British geographers were most cordial and generous in the entertainment extended to the delegates and in the many contacts made. Much good was done in the establishment of good-will among the members of the group, and this will be reflected in each of the home countries. The exchange of views on the many scientific problems brought up at the conference led to the appointment of several international committees who are to report at the Paris meeting in 1931. Among these committees there is one at work on "Shoreline Changes," another on the "One to a Millionth Map of the World," and another on "The Rural Habitat." The Congress reflected a great variety of interest in the number of professions thruout the world.

Dr. Bagley of Teachers College presented a most interesting and stimulating paper dealing with the utilization of the element of adventure in teaching and learning geography. He made a plea for the "Teacher-scholar" who loves his subject. The research scholars are necessary also that there may be enlightment in ever widening circles. He holds that geography is a very liberalizing subject and frees one from the handicap of his local horizon. Geography is relatively concrete and so appeals to immature minds in the grades. Our heroes of discovery were geographers and so may be said to make geography and not history. They were explorers, not merely adding territory, and hence should be mentioned in our geography work, and not be given over to history alone. All the past materials of explorers and explorations should be available to our classes in geography that our students may participate vicariously in the exploration—really live with these great men. Vicarious travel has been one of Dr. Bagley's greatest pleasures and he holds that it should be to our students. We should show greater recognition and gratitude to the world's discoverers and develop a keener appreciation of their work. However, we must not make geography "mushy nor flabby," but should take hard work for granted and learn the ways in which knowledge is made and encourage independent observation.

Another stimulating paper was presented by Dr. Frank McMurry of Teachers College at the Annual Dinner. Dr. McMurry has been carrying on extensive investigations to ascertain more effective methods of organizing the great body of geographic ma-

terial for the present grade levels, particularly for the lower grades. He holds that our present methods are very defective in many respects, and he is now working upon the plan of community study. His plan is to study a variety of communities in various parts of the world, showing the intimate relationship of the lives and work of these people with their natural environment. The following may be stated as his principal conclusions at the present stage of his study.

1. Geography for the elementary school should be defined as the study of man in relation to his physical environment.

2. If that definition were accepted, it would rule out the present study of political divisions by the customary list of topics; because this list does not make man first either in time or in importance.

3. The general unit for study should be Community Life. And the two subdivisions of this unit might well be Village Community Life and City Community Life.

4. The Village Community should lead in time, because it is the simpler kind of study, contains most of the basal elements of home geography and furnishes motive for study of the cities.

5. The physical features, such as location, surface, climate, etc., should be introduced only as they play their part in the lives of the people. By treating them as topics, we divorce them from human beings.

6. Type treatment, by which one community is discussed in detail and then compared with others, affords the highest degree of concreteness in presentation. The customary generalizations in present geography make the subject needlessly abstract.

7. The minimum essentials of the curriculum should be the main facts showing how the village and city communities in the leading countries are related to their physical environment or are living. For example, the character of the homes, the extent and variety of their food, the amount of cartage on the streets; the relation of the temperature and rainfall to these conditions, etc., etc.

8. These guiding thoughts are applicable in principle alike to all grades. But I am stressing their application at present to the grades IV and V, because they are suffering most.

9. One difference between the curriculum of grades IV and V as opposed to the higher grades should be far fewer countries treated—and in much more detail.

A critical analysis of geography and the social studies was presented by Dr. J. Russell Smith of Columbia University. Dr. Smith's paper dealt with the effort to combine a number of our common subjects into one unit under the heading "Social Studies." Geography is a complex study and we have been at it but a relatively short time. The same is more or less true of civics and history. And yet Dr. Rugg—the chief advocate of social studies—"with no training whatever in geography, and a specialized training in mathematics and psychology, would lump all these subjects together including geography." Dr. Smith holds that Dr. Rugg would put undeveloped studies into one fusion. He

makes a plea to let us have time to work out each one separately that we may experience the "thrill of understanding" and not have a mere "dramatic episode."

Dr. McConnell of Miami University made a plea for the better preparation of teachers. He holds that the child can see relationships and form inductions, and reason from cause to effect, and can search for knowledge, but too often the teacher is incapacitated and can give only facts from texts and little more. Geography as taught to children is often purely descriptive and entertaining material. To teach well one should know the fundamental principles of geography and should have a geographic point of view. He holds that geography is what one thinks and not what one hears or sees and that geography teachers must develop fruitful imagination. Familiarity with illustrative material is not enough and does not necessarily promote profitable activities. There must be a widening of subject matter, associate location with climate, relief, etc., and thus enlarge the vision. Scholarship is one of the greatest needs of geography teachers at the present time.

Dr. Goode of the University of Chicago set forth the great progress that has been made in the preparation of maps for schools and for more detailed scientific use. His discussion of maps included modern atlases, and brought out the fact that while we have made great progress in the improvement of our school maps, we are still far behind Europe in the quality of our atlases.

Dr. Bengtson of the University of Nebraska presented fully the position of geography in the high schools of the country at the present time. Economic, commercial, or industrial geography, is now the principal type taught in our high schools. No doubt this will continue to hold its place as an important contributor to general education.

Professor Whitbeck of the University of Wisconsin discussed geography in higher education. In virtually every European university geography is given regularly, most commonly in association with history. British universities were slow in recognizing the study but it is now established in all of them. Of about 400 American colleges and universities, whose catalogs were examined, 80 per cent offer courses in geography. Geography is gaining rapidly in the colleges and universities of the United States, both because of the practical value of geographical knowledge, and be-

cause of its value in a liberal education. It gives an additional and philosophical view to the educated person, for it trains him to view relations between man and his natural environment in a way that no other study does. What man does—viewed in a long way—depends much upon *when* he lives and *where* he lives, *what* he has to do with, and the *ease of contact* with other types of civilization. The geographer does not claim that the geographical environment *controls* man's activities, but it does constantly influence them.

The Committee on Resolutions presented the following report which was adopted unanimously.

1. *Resolved:* That the National Council of Geography Teachers expresses its sincere appreciation to Teachers College, Columbia University, for its courtesy in extending the use of its facilities during the meeting of 1928.

2. *Resolved:* That the members of the National Council of Geography Teachers wish again to voice their untiring efforts in behalf of the JOURNAL OF GEOGRAPHY.

3. *Resolved:* That much thanks are due to President Packard, to the other officers of the Council, who have contributed to the success of the meeting, and to the speakers who have generously given of their time in preparing papers for this meeting.

4. We wish to recommend to the members of the National Council the desirability of further scientific research in problems of geography teaching, and in the importance of having representative geographers on national committees interested in curriculum studies.

C. E. COOPER
N. A. BENGTSON
JULIA SHIPMAN

The following business was transacted at the annual meeting of the Board of Directors and Executive Committee, December 27, 1928.

1. The Nominating Committee, consisting of R. H. Whitlock, A. E. Parkins, and R. M. Brown, presented its report and the following officers were elected.

President, Nels A. Bengtson, University of Nebraska, Lincoln, Nebraska.

First Vice-President, De Forest Stull, Teachers College, New York City.

Second Vice-President, Myrtle Grenels, State Normal School, Farmville, Virginia.

Secretary, George J. Miller, State Teachers College, Mankato, Minnesota.

Treasurer, Douglas C. Ridgley, Clark University, Worcester, Massachusetts.

Members of Executive Committee, terms to expire December, 1931: W. W. Atwood, Clark University, Worcester, Massachusetts; A. E. Parkins, George Peabody College for Teachers, Nashville, Tennessee; L. O. Packard, Teachers College of the City of Boston, Boston, Massachusetts.

Directors at Large: M. E. Branom, Harris Teachers College, St. Louis, Missouri; Fred J. Breeze, Teachers College, Muncie, Indiana; C. E. Cooper, Ohio State University, Athens, Ohio; O. W. Freeman, State Normal School, Cheney, Washington; Erna Grassmuck, State Teachers College, Indiana, Pennsylvania; Clare Symonds, Senior High School, Quincy, Illinois.

2. It was voted to establish the policy of having the First Vice-President succeed to the Presidency following the expiration of his term of office as Vice-President. During his term as Vice-President he is to assist the President in promoting the work of the National Council.

3. The President was directed to appoint two delegates to the Geneva Conference of the World Federation of Education Associations, July, 1929.

4. The President was authorized to appoint a committee to study and decide the position to be taken by the National Council on the question of simplification of the calendar.

5. The President was directed to appoint a committee to formulate plans 1) for the creation and administration of a Trust Fund, the income therefrom to be used for research in geographic education and for publication, 2) for the establishment of Life Memberships, and 3) for securing the support of Patrons.

6. No decision was reached concerning the meeting place for December, 1929, but the meeting will probably be held at the University of Ohio at Columbus.

GEORGE J. MILLER, *Secretary*

GEOGRAPHIC BACKGROUNDS IN SOCIAL STUDIES

Do high school students know or learn the geographic backgrounds of their courses in the social sciences, especially in their American History? With this problem in mind a series of tests were prepared by the Department of Geography of the University of Nebraska, each exercise of which had both geographic and historic significance. After these exercises had been validated by professors of American History and by specialists in educational tests and measurements they were given to a large number of Nebraska high school pupils who were completing their courses in American History. The results of the tests were so significant relative to both geography and history that it has been decided to extend the study to include all parts of the United States.

The cooperation of schools from various parts of the country is solicited. Since only the general situation is in question, the results of the tests in individual schools will not be divulged. Those who are willing to cooperate in this project are asked to notify Professor E. E. Lackey, The University of Nebraska, Lincoln. It is hoped to have the results of this investigation presented at the next annual meeting of the National Council of Geography Teachers.

NELS A. BENGSTON,
President, National Council of Geography Teachers

EDITORIAL NOTES AND NEWS

After the destruction of Tokyo-Yokohama by the earthquake of September, 1923, the situation looked so helpless that the moving of the capital to another site was under consideration. But the advantages of the present site were judged to be of greater significance than the handicaps imposed by the likelihood of destructive earth tremors. So the rebuilding was commenced, but not in the haphazard way of old but along a reconstruction plan approved by the Imperial Government. The plan does not involve the mere repair of damage, but the modernization of an oriental city along occidental lines.

Briefly the plan calls for the construction of buildings in which the fire and earthquake hazard is reduced to a minimum; the provision for modern transportation by vehicles of all sorts; and the creation of facilities for the economic functioning of the community thru the establishment of a zoning system for industrial, commercial, and residential structures.

Most of the large structures are being built of reinforced concrete, and must not exceed 100 feet in height. This elimination of skyscrapers from these cities of more than 2 million inhabitants necessitates a very extensive building space, which in turn gives rise to transportation problems. Subways are under consideration. Parks, too, are being provided, not merely for their esthetic and recreational values, but as a refuge in case of danger.

The carrying out of such a reconstruction program required a readjustment of private property and boundary lines. Property owners in the devastated districts being redesigned were required to give up, without compensation, 10 per cent of their land holdings. Necessarily some exceptions to this had to be made, as some plots could not spare that reduction in area without interfering seriously with the structures and industries located thereon.

This reallotment of land entails house moving. More than 200,000 houses in Tokyo must be moved in order to make way for the widening of streets and the creation of parks and fire lanes.

Already the cities are more than half rebuilt, and they are striving to recover their financial status and lost trade, especially that in silk which was diverted to Kobe-Osaka. All of it will probably never be wrested from Kobe, but it is significant to note that Yokohama has recovered and passed its pre-earthquake exports.

This is but a brief digest of the Trade Promotion Series No. 69, Reconstruction and Development of the Tokyo-Yokohama District, which may be secured for 30 cents from the Supt. of Documents, Washington, D.C.

Those interested in visual aids may find suggestions in certain pamphlets issued by the University of the State of New York—The State Department of Education, Visual Instruction Division, Albany. Each pamphlet contains a list of slides and photographs on a particular region. Some of the pamphlets also contain items of interest pertaining to the scenes portrayed, as well as a bibliography. The work is under the auspices of A. W. Abrams, Director of the Visual Instruction Division.

R. M. Rutledge of the University of Utah has prepared a booklet of questions to be used as an aid to teaching J. Russell Smith's North America. The booklet contains 52 pages, costs 25 cents, and may be secured from Harcourt, Brace and Co., New York.

The last issue of Ymer, the official publication of the Swedish Anthropological and Geographical Society, is a special number dedicated to the memory of Gunnar Andersson, Otto Nordenskjold, and Finn Malmgren.

Nearly two-thirds of Porto Rico's schools were either totally or partially destroyed by the hurricane of September 13, 1928. Not only were buildings demolished, but the wind swept away the schools' equipment. Many of the children, too, were without clothes and homes. And yet within two weeks following the hurricane, 90 per cent of the schools were in session, even tho many classes were held in roofless schoolhouses.

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Here are some of the things scheduled to appear in the *Journal.*

1. The Element of Adventure in Teaching and Learning Geography. William C. Bagley, Teachers College, Columbia University, New York City
2. The Selection of Subject Matter for Geography in the Elementary School. Frank M. McMurry, Teachers College, Columbia University, New York City
3. Geography and World Citizenship. L. O. Packard, Teachers College of the City of Boston
4. Qualifications Requisite for Teaching Geography. Zoe A. Thralls, University of Pittsburgh
5. Industrialized Geography. H. W. Fairbanks, Glendale, California
6. The Iron and Steel Industry of the United States. Richard Hartshorne, University of Minnesota, Minneapolis
7. Farmers and Farming in Cambridgeshire. Ella M. Wilson, Michigan Normal College, Ypsilanti, Michigan
8. Some Frontier Conditions in the Hilly Portions of the Ozarks. W. A. Browne, Teachers College, Nacogdoches, Texas
9. The Agricultural Industries. O. E. Baker, Senior Agricultural Economist, U. S. Department of Agriculture
10. The Commerce of the United States. Helen M. Strong, Geographer, U. S. Bureau of Foreign and Domestic Commerce
11. Geographic Regions of India. D. R. Bergsmark, University of Cincinnati
12. Geography in Educational Institutions Above the High School. Ida M. Shrode, Junior College, Pasadena, California

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